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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,082	04/21/2005	Takashi Ochi	IPE-056	8287

20374 7590 06/11/2009

KUBOVCIK & KUBOVCIK
SUITE 1105
1215 SOUTH CLARK STREET
ARLINGTON, VA 22202

EXAMINER	
SYKES, ALTREV C	
ART UNIT	PAPER NUMBER
1794	

MAIL DATE	DELIVERY MODE
06/11/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/532,082	OCHI ET AL.	
	Examiner	Art Unit	
	ALTREV C. SYKES	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *March 2, 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,7,8,10-12,14-21,23,24,27-34,39-41,46,47,53 and 56-59* is/are pending in the application.

4a) Of the above claim(s) *14,15,20,21,23,24,27-34,39-41,46 and 47* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,7,8,10-12,16-19,53,56-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pg. 1, filed March 2, 2009, with respect to the rejection(s) of claim(s) 1,4, 7,8,10-12,16-19, 53,56-59 under 35 U.S.C. 102(b) and 103(a) have been fully considered and are persuasive. The Shimoyama et al. (JP 2004-256983) reference is not prior art. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 7, 11-12, 16-19, 53, and 58-59 are rejected under 35 U.S.C. 102(b) as being anticipated by Mirle et al. (US 2002/0035354).

Regarding claims 1, 7, 12, 17 Mirle et al. discloses absorbent articles with improved protection and comfort by use of an absorbent barrier structure. (See [0016]) Mirle et al. discloses Absorbent articles may include diapers, training pants, adult incontinence undergarments, feminine hygiene products, breast pads, and the like. (See [0029]) Mirle

et al. discloses nonwoven webs may be formed by a variety of processes known to those skilled in the art, for example, meltblowing, spunbonding, and various bonding-carding processes.(See [0038]) Mirle et al. discloses the term "spunbonded web" refers to a web having fibers formed by extruding a molten thermoplastic material as filaments from a plurality of fine capillaries of a spinnerette having a circular or other configuration, then rapidly reducing the diameter of the extruded filaments by fluid drawing or other well known spunbonding mechanisms. (See [0039]) Examiner therefore has sufficient reason to believe that the spunbonded nonwoven web as disclosed by Mirle et al. would comprise fibers having a morphology of a spun yarn. Mirle et al. discloses particularly suitable for use are nanofibers having an average fiber diameter in the range of preferably less than about 150 nanometers. Exemplary nonwoven webs made from nanofibers (having average fiber diameters from about 10 to about 100 nanometers).(See [0093]) According to the instant specification single fibers in a range from $1*10^{-7}$ to $2*10^{-4}$ dtex in single fiber fineness are equivalent to single fiber diameter from 1 to 150 nm. (See [0122]) As such, examiner has sufficient reason to believe that the nonwoven webs as disclosed by Mirle et al. would inherently have the single fiber fineness by number average as claimed by applicant. Further, examiner notes that the nonwoven of nanofibers as disclosed by Mirle et al. would inherently have 60% or more of fibers in the claimed range since it is preferred that the nanofibers have an average fiber diameter of less than about 150 nanometers. Mirle et al. discloses exemplary fibers include synthetic fibers made from inherently wettable thermoplastic polymers, such as polyesters, polyamides, their copolymers, and mixtures of these polymers; and synthetic fibers made

from a nonwettable thermoplastic polymers and other polyolefins, which may be hydrophilized by appropriate means.(See [0078] and [0086])

Regarding claims 11 and 16, Mirle et al. discloses the zones may contain additives such as chemical bonding agents, crosslinking agents, debonding agents, liquid or moisture absorbing agents, odor absorbing agents, coloring agents, stiffening agents, and mixtures thereof. The liquid or moisture absorbing agents, include, but are not limited to, osmotic liquid holding agents, and mixtures thereof. (See [0079] and [0096])

Regarding claim 18 Mirle et al. discloses while the strength of the meltblown nonwoven web generally decreases with decreasing fiber fineness, the strength can be improved by lamination with a reinforcing scrim or another web such as tissues, paper towels, or spunbonded nonwoven webs. In one embodiment, the microfiber nonwoven web may be integrally laminated during the manufacture by direct melt blowing onto another web or a reinforcing scrim. (See [0094])

Regarding claim 19, Mirle et al. discloses it is also apparent that the absorbent barrier structure of the present invention is suitable for use in other hygiene or health care products, such as bandages, dressings, wipes, bibs, surgical drapes, surgical gowns, and the like. (See [0041])

Regarding claim 53, Mirle et al. discloses particularly suitable for use are nanofibers having an average fiber diameter in the range of preferably less than about 150 nanometers. Exemplary nonwoven webs made from nanofibers (having average fiber diameters from about 10 to about 100 nanometers).(See [0093]) According to the instant specification single fibers in a range from $1*10^{-7}$ to $1*10^{-4}$ dtex in single fiber fineness are equivalent to single fiber diameter from 1 to 100 nm. (See [0124]) As such, examiner has sufficient reason to believe that the nonwoven webs as disclosed by Mirle et al. would inherently have the single fiber fineness by number average as claimed by applicant. Further, examiner notes that the nonwoven of nanofibers as disclosed by Mirle et al. would inherently have 60% or more of fibers in the claimed range since Mirle et al. discloses that exemplary nonwoven webs made from nanofibers (having average fiber diameters from about 10 to about 100 nanometers).(See [0093])

Regarding claims 58-59, Mirle et al. discloses the term "spunbonded web" refers to a web having fibers formed by extruding a molten thermoplastic material as filaments from a plurality of fine capillaries of a spinnerette having a circular or other configuration, then rapidly reducing the diameter of the extruded filaments by fluid drawing or other well known spunbonding mechanisms. (See [0039]) Mirle et al. discloses spunbond fibers are generally continuous and often have average between 20 to 30 microns. (See [0039]) Examiner therefore has sufficient reason to believe that the spunbonded nonwoven web as disclosed by Mirle et al. would have an orientation that extends in one dimension over a definite length or at least several meters.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 4, 8, 10, 56, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mirle et al. (US 2002/0035354).

Regarding claims 4 and 8, Mirle et al. teaches the claimed invention above but fails to teach 50% or more of single fibers that constitute the aggregate of nanofibers are in a section having a width of 30nm in diameter of the single fibers or a strength of 1 cN/dtex or higher. However, Mirle et al. discloses the term "zone" refers to a region or an area comprising a material being physically, chemically, or visually distinguishable from surrounding or adjoining materials. Various zones of materials may include transitional zones in between. The zones may be positioned in the z-dimension or in the xy-dimension. (See [0031]) Mirle et al. discloses the reservoir zone typically comprises a

high wet strength tissue and may include a wet strength resin. (See [0074]) It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the percent of nanofibers in a specific section of the article since it has been held that, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Mirle et al. discloses absorbent articles may include diapers, training pants, adult incontinence undergarments, feminine hygiene products, breast pads, and the like. (See [0029]) In the present invention, one would have been motivated to optimize the percent of nanofibers in a specific section of the article motivated by the desire to tailor the final absorbent structure for end use since Mirle et al. is clear that transitional zones may be included in the absorbent articles which would distinguish one zone from another thereby providing different properties to the article as a whole. (See [0031])

Regarding claims 10 and 56, Mirle et al. discloses the claimed invention except for the aggregate of nanofibers has a rate of elongation at absorbing water of 5% or higher in the longitudinal direction of the yarn or that the mass per unit area of the fiber is in a range from 20 to 2000 g/m^2. Mirle et al. discloses The absorbent barrier structure of the present invention has a balanced property between convective air flow and absorptive barrier property. The convective air flow property is effective to reduce the relative humidity within the space between the absorbent article and the wearer's skin. The combination of liquid absorption and liquid barrier property provides protection against the wet through

problem, and is especially beneficial when the absorbent article is under impact and/or sustained pressured conditions. (See [0018]) Mirle et al. discloses absorbent articles may include diapers, training pants, adult incontinence undergarments, feminine hygiene products, breast pads, and the like. As used, the term "body fluids" or "body exudates" includes, but is not limited to, urine, blood, vaginal discharges, sweat and fecal matters. (See [0029]) As the structure of Mirle et al. has been shown to be substantially similar to that as claimed by applicant, it would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the rate of elongation and mass per unit area since it has been held that, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In the present invention, one would have been motivated to optimize the rate of elongation at absorbing water and the mass per unit area of the fibrous material in order to tailor the final absorbent structure for end use.

Regarding claim 57, Mirle et al. discloses exemplary fibers include synthetic fibers made from inherently wettable thermoplastic polymers, such as polyesters, polyamides, their copolymers, and mixtures of these polymers; and synthetic fibers made from a nonwettable thermoplastic polymers and other polyolefins, which may be hydrophilized by appropriate means.(See [0078] and [0086]) However, the reference does not specifically disclose the thermoplastic polymer comprises polyphenylene sulfide.

While Mirle et al. is not explicit to the use of polyphenylene sulfide, examiner notes that the use of polyphenylene sulfide would have been well within the ordinary skill of one in the art in the fibers of Mirle et al. since the reference discloses that thermoplastic polymers may be used for the synthetic fibers. As such, one of ordinary skill in the art would have been motivated by expected success to utilize the thermoplastic polymer as claimed by applicant since there is no showing on the record that the claimed thermoplastic polymer would inhibit the objectives of Mirle et al.

7. Claims 1, 4, 7, 8, 11-12, 16-19, 53, and 56-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benson et al. (US 2002/0046656).

Regarding claims 1, 7, 12, 17, 53 Benson et al. discloses the use of fine fiber or fiber having a fiber diameter of about 0.0001 to 0.5 microns has become an important design tool for filter media. (See Abstract) According to the instant specification single fibers in a range from $1*10^{-7}$ to $2*10^{-4}$ dtex in single fiber fineness are equivalent to single fiber diameter from 1 to 150 nm. (See [0122]) According to the instant specification single fibers in a range from $1*10^{-7}$ to $1*10^{-4}$ dtex in single fiber fineness are equivalent to single fiber diameter from 1 to 100 nm. (See [0124]) Examiner notes that the nonwoven of nanofibers as disclosed by Benson et al. would inherently have 60% or more of fibers in the claimed range since it is disclosed that the nanofibers have an average fiber diameter of 0.0001 to 0.5 microns. (See [0009]). Examiner notes that 0.0001 microns to 0.1 nm and 0.5 microns to 500 nanometers. Benson et al. discloses polymeric

compositions in the form of fine fiber such as microfibers, nanofibers, in the form of fiber webs, or fibrous mats used in a unique improved filter structure. (See [0008]) Benson et al. discloses the term "media" refers to a woven or non-woven sheet like substrate made from a natural or synthetic fiber such as cellulose, polyester, nylon, polyolefin, etc. (See [0013]) Electrostatic solution spinning is one method of making nanofibers and microfiber. (Se [0044]) Natural fiber and synthetic fiber substrates, like spun bonded fabrics, non-woven fabrics of synthetic fiber. (See [0037]) Examiner therefore has sufficient reason to believe that the spun nonwoven web as disclosed by Benson et al. would comprise fibers having a morphology of a spun yarn.

Further regarding claims 1 and 53, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the fiber diameter (i.e. single fiber fineness) since it has been held that, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Benson et al. discloses the polymeric materials of the invention are compositions that have physical properties that can also permit the polymeric material, in a variety of physical shapes or forms, to have resistance to the degradative effects of humidity, heat, air flow, chemicals and mechanical stress or impact while maintaining effective filtration during use. (See [0008]) Each of these filter formats can be constructed and arranged in a variety of known technologies. Any filter format can be used that results in the filtered media passing twice through a fine fiber layer. (See [0010]) In the present invention one

of ordinary skill in the art would have been motivated by end product use of the filter media.

Regarding claims 4 and 8, Mirle et al. teaches the claimed invention above but fails to teach 50% or more of single fibers that constitute the aggregate of nanofibers are in a section having a width of 30nm in diameter of the single fibers or a strength of 1 cN/dtex or higher. As the structure of Benson et al. has presented a case of prima facie obviousness to the structure as claimed by applicant, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the nanofibers and section width since it has been held that, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Benson et al. discloses each of these filter formats can be constructed and arranged in a variety of known technologies. Any filter format can be used that results in the filtered media passing twice through a fine fiber layer. (See [0010]) In the present invention, one would have been motivated to optimize the nanofibers and section width motivated by the desire to tailor the final filter for end use.

Regarding claims 11 and 16, Benson et al. discloses chemical agents may be used. (See [0034])

Regarding claims 18 and 19, Benson et al. discloses an improved filter structure can be manufactured by modifying a filter structure having a single fine fiber layer on one side

of a substrate into a filter structure having two fiber layers. (See [0009]) For example, media may be laminated to conventional media, be utilized in stack arrangements; or be incorporated (an integral feature) into media structures including one or more regions of conventional media. (See [0066])

Regarding claim 56, Benson et al. discloses the claimed invention except for the mass per unit area of the fiber is in a range from 20 to 2000 g/m^2. Benson et al. discloses the term "pore" refers to a passage or opening in the web through the fine fiber layer that is formed from a periphery of 2 or more fine fibers. The pore can result from the intermingling of a variety or large number of fine fibers creating or forming openings of a size that can be effective in trapping particulate materials. However, any fine fiber layer can have openings of a variety of sizes. (See [0009]) As the structure of Benson et al. has been shown to be substantially similar to that as claimed by applicant, it would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the rate of elongation and mass per unit area since it has been held that, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In the present invention, one would have been motivated to the mass per unit area of the fibrous material in order to tailor the final filter structure for end use.

Regarding claim 57, Benson et al. discloses polymer materials that can be used in the polymeric compositions of the invention include both addition polymer and condensation polymer materials such as polyolefin, polyacetal, polyamide, polyester, polyalkylene sulfide, and mixtures thereof. (See [0042]) While Benson et al. is not explicit to the use of polyphenylene sulfide, examiner notes that the use of polyphenylene sulfide would have been well within the ordinary skill of one in the art in the fibers of Benson et al. since the reference discloses that the polymers may include polyalkylene sulfide. As such, one of ordinary skill in the art would have been motivated by expected success to utilize the thermoplastic polymer as claimed by applicant since there is no showing on the record that the claimed thermoplastic polymer would inhibit the objectives of Benson et al.

8. Claims 58-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benson et al. (US 2002/0046656) and further in view of Mirle et al. (US 2002/0035354).

Regarding claims 58-59, Benson et al. discloses natural fiber and synthetic fiber substrates, like spun bonded fabrics, non-woven fabrics of synthetic fiber. (See [0037]) However, the reference does not specifically disclose an orientation that extends in one dimension over a definite length or at least several meters.

Mirle et al. discloses the term "spunbonded web" refers to a web having fibers formed by extruding a molten thermoplastic material as filaments from a plurality of fine capillaries

of a spinnerette having a circular or other configuration, then rapidly reducing the diameter of the extruded filaments by fluid drawing or other well known spunbonding mechanisms. (See [0039]) Mirle et al. discloses spunbond fibers are generally continuous and often have average between 20 to 30 microns. (See [0039])

As Benson et al. and Mirle et al. are both directed to nonwoven materials comprising ultra fine fibers, the art is analogous. Therefore, it would have been obvious to one of ordinary skill in the art to use a spun bonded fabric as taught by modified Benson et al. in order to have an orientation that extends in one dimension over a definite length or at least several meters since success has already been shown in the art for nonwoven materials comprising fibers of fine diameter.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALTREV C. SYKES whose telephone number is (571)270-3162. The examiner can normally be reached on Monday-Thursday, 8AM-5PM EST, alt Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 1794

/ACS/
Examiner
5/28/09